

ABSTRACT

The present invention relates to a variable flow control apparatus for an actuator of a heavy construction equipment capable of implementing constant flow of hydraulic fluid from a hydraulic pump to an actuator even when a pilot pressure capable of driving a seat valve openably and closably installed in a discharge flow path of the hydraulic pump exceeds a certain pressure level.

A variable flow control apparatus for an actuator of a heavy construction equipment is comprised of an actuator connected to a hydraulic pump, a directional control valve that is disposed between the hydraulic pump and the actuator and is adapted to control a start, stop and direction change of the actuator when a spool installed in a housing is switched, a first seat valve that is movably installed in the housing and has a variable throttle varying according to its movement, a second seat valve that is openably and closably installed between a pump path of the hydraulic pump and a upstream/downstream flow paths and has a variable throttle adapted to change opening area from the pump path to the flow paths when being moved relative to the first seat valve, a pilot flow control valve that has a pilot spool switchable by pilot pressure and is adapted to control the movement of the first and second seat valves, a third seat valve that is installed elastically and movably relative to the second seat valve and switched to direct constant flow from the hydraulic pump path to the downstream flow paths when pilot pressure over a certain level is applied to the pilot flow control valve and a sub-piston that is slidably installed in the interior of the pilot spool and expands opening area of the downstream flow paths of the hydraulic pump, which is in a throttling state, by switching the second seat valve in the upward direction when pressure of the downstream flow paths exceeds a certain pressure level.